Product Information

Control No. : ARP-481300- E 1

Issued on August 26, 2020

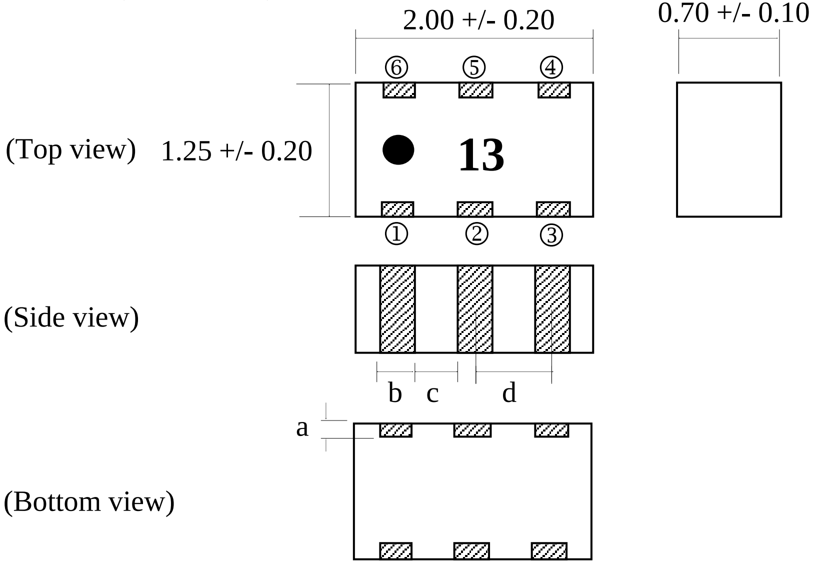
Application : 3dB 90deg Hybrid Coupler for 2300-2700MHz

RoHS Compliant Part

1. Type No.

HMD813D-HYB2500

2. Dimension (Unit : mm)



	Terminal
①	Input
②	GND
③	Isolation
④	Direct
⑤	GND
⑥	Coupled

Terminal Dimensions	
a	0.19typ.
b	0.30 +/- 0.15
c	0.35 +/- 0.15
d	0.65 +/- 0.15

3. Electrical characteristics

Pass band	Specification	Typical	Unit	Remark
fc (Center frequency)	2500	-	MHz	
Pass band frequency	2300-2700	-	MHz	
Nominal impedance	50	-	ohm	
Insertion Loss at 25degC.	0.40 Max.	0.25	dB	
Input Return Loss	15 Min.	27.4	dB	
Isolation	18 Min.	28.5	dB	
Amplitude balance	0.9 Max.	0.18	dB	
Phase balance	90+/-8	89.6	deg	

4. Note

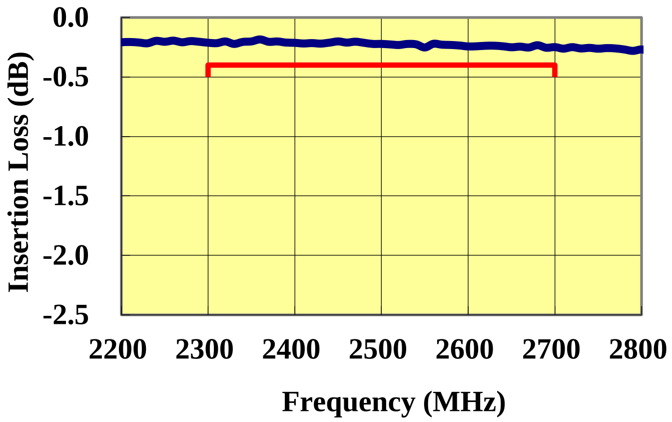
4.1 Operating Temperature Range : -40 to +105 deg.C
4.2 Storage Temperature Range : -20 to +35 deg.C (In a Taping Package)
4.3 Max Input Power : 3W Avg/CW
4.4 Standard Reel Quantity : 2,000 pcs (per reel, per bag)

Approved by	**Confirmed by**	**Raised by**
Y. Mizutani	**T. Hasegawa**	**S. Suzuki**

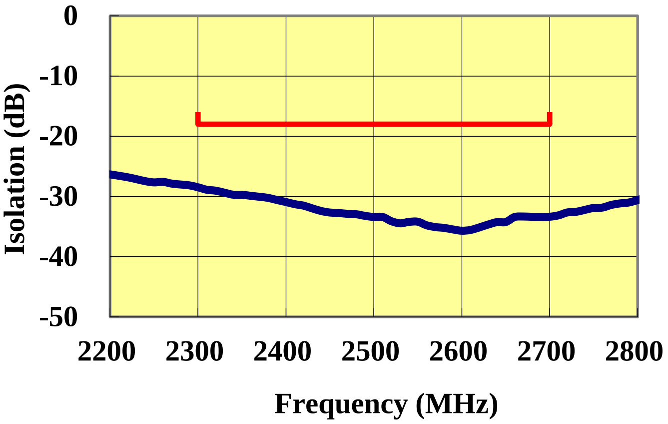
Measured data

5.Representative characteristics

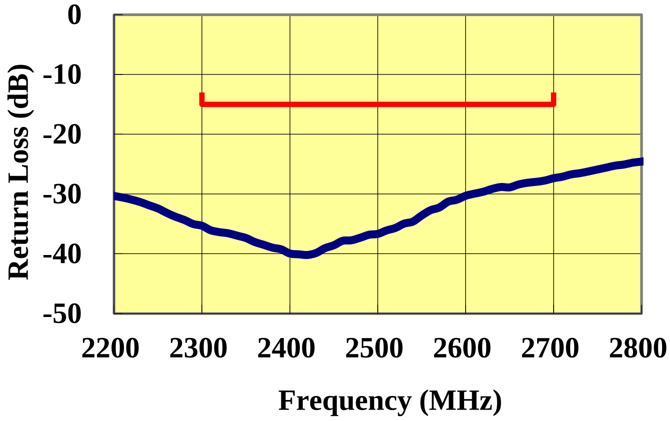
Frequency vs. Insertion Loss



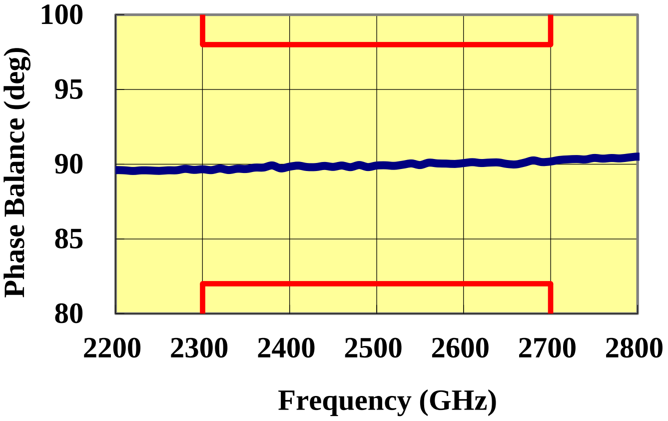
Frequency vs. Isolation



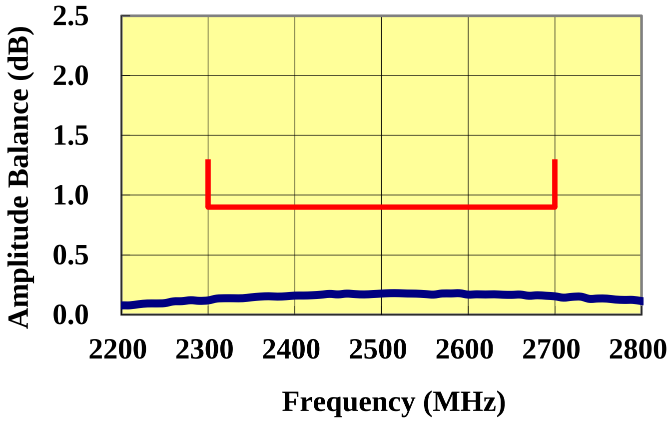
Frequency vs. Return Loss



Frequency vs. Phase Balance

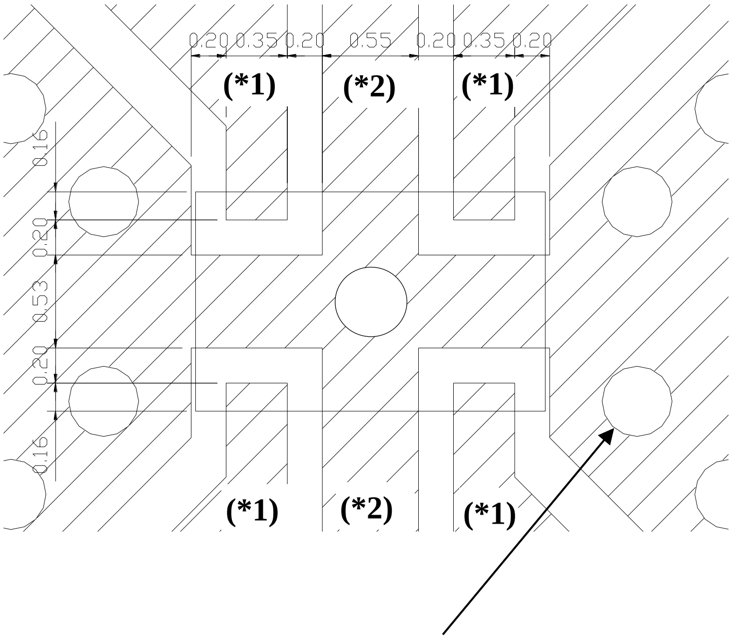


Frequency vs. Amplitude Balance



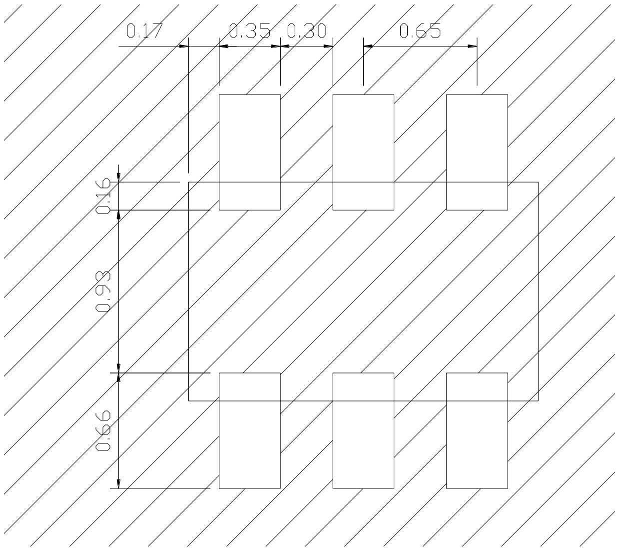
6.Recommendation Land Pattern (Unit:mm)

*Land Pattern



Through hole (φ0.4mm)

*Resist Pattern



*1 50 ohm impedance Line
*2 Ground Plane

7. Packing method

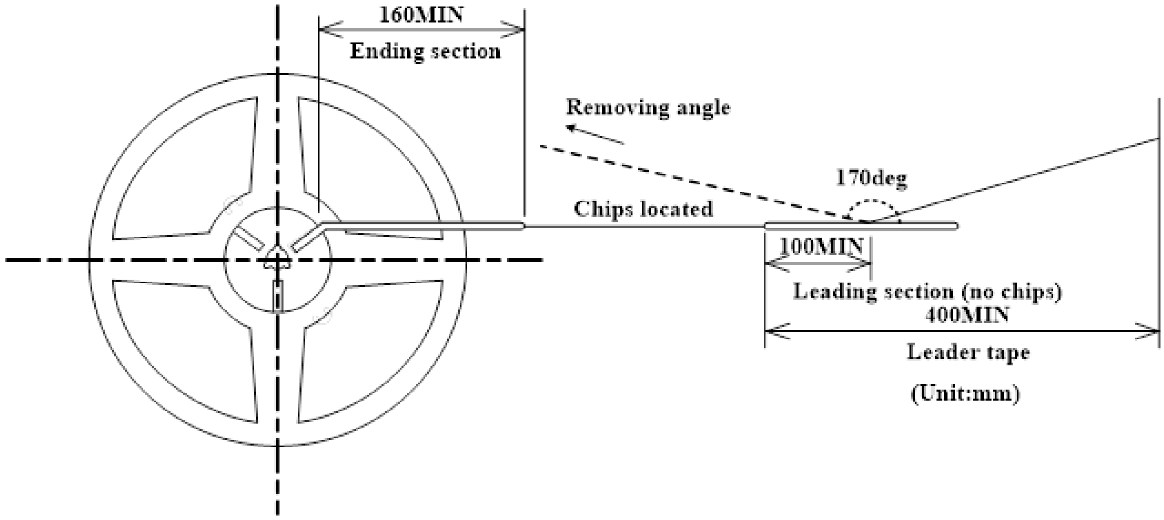
7.1 Taping conditions are shown below. Refer to IEC60286-3

(1) Tape must be wound clockwise with the feeding hole coming to the right hand side.

(2) Top cover tape must not cover feeding holes of carrier tape and/or show out of carrier tape.

(3) A blank section carrying no chips of a length of 160mm min. on ending section and 100mm min. on leading section must be provided.

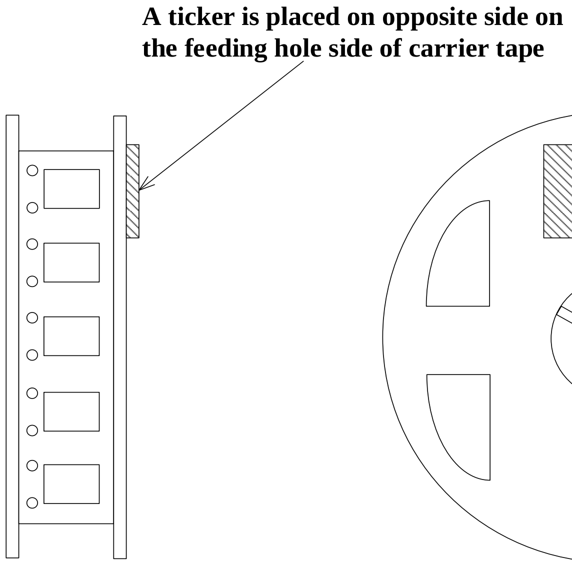
(4)A leading section of 400mm min. must be provided on top cover tape.

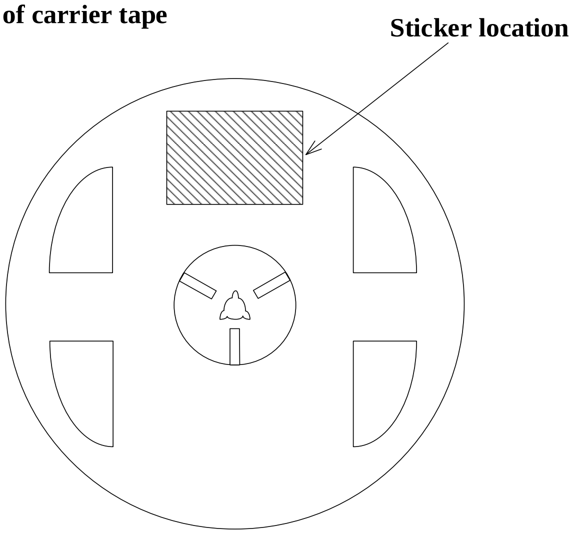


(5) To end tape winding, the leading section of top cover tape must be stuck on a side of a reel with adhesive tape.

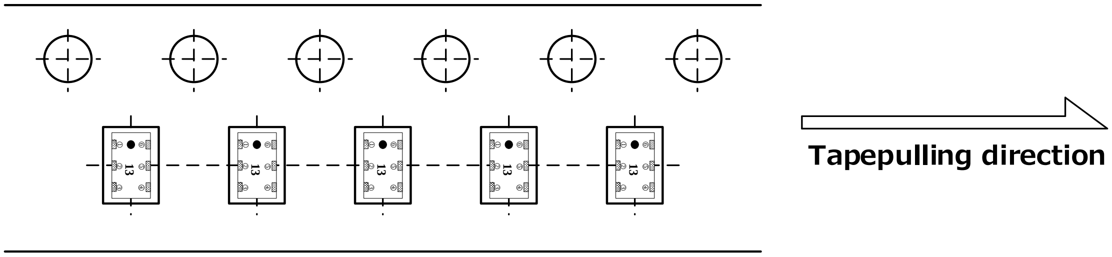
(6) Removing force of top cover tape in the unwinding with an angle of 170 degrees between the removed side of a reel and carrier tape must be 0.1 to 1.0 N.

(7) A sticker carrying Soshin product №, quantity, lot №, inspection date is to be placed on the specified side of reels. And Lot No. means our production control number. The shipment records are available if requested.





(8) Product orientation must be consistent. Products must not be positioned out of the mounting location.

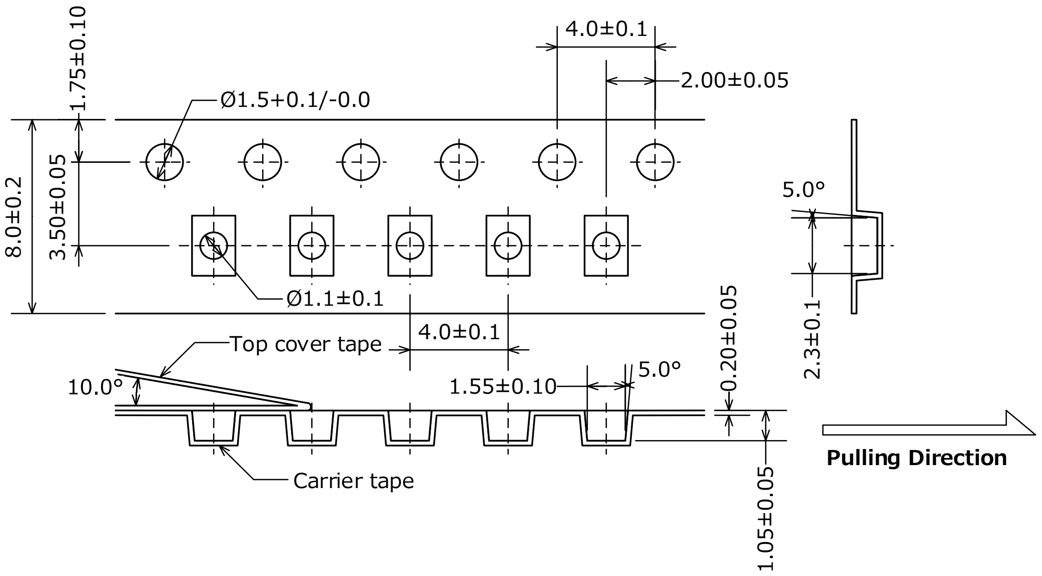


(9) A taping reel must be sealed in a plastic bag, individually.

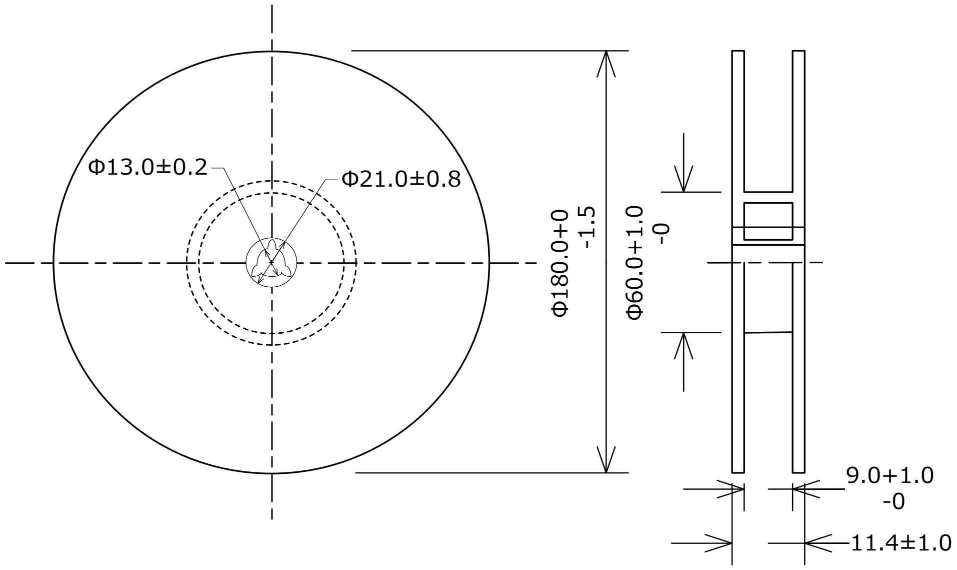
(10) Tape-packaged quantity

The quantity is 2,000 pcs per single tape-package as a rule.

7.2 Dimensions of the carrier tape (Unit : mm)

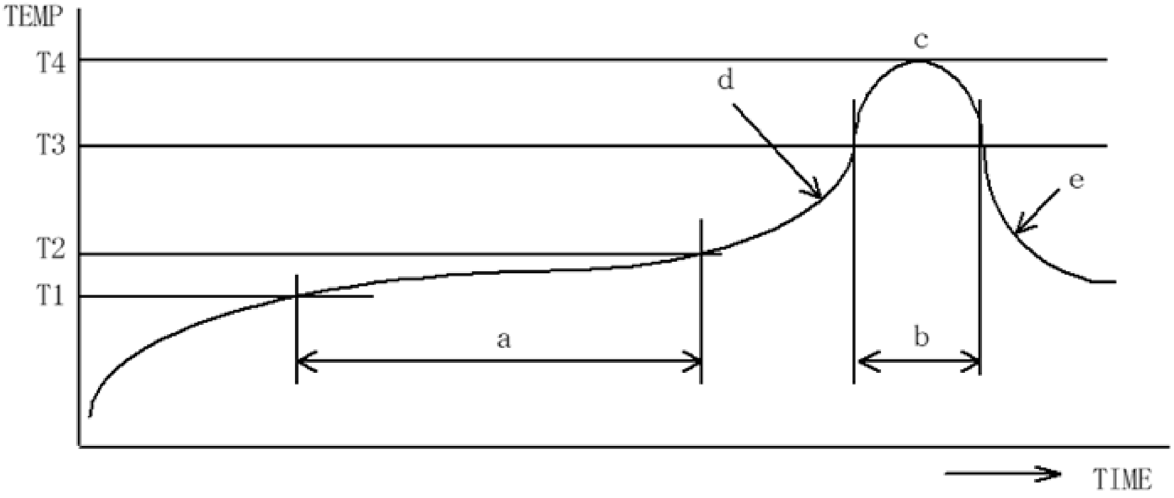


7.3 Carrier tape reel dimensions (Unit : mm)



8. Recommend operating conditions

8.1 Reflow-soldering conditions(For reference)



(1) High temperature reflow-soldering conditions (No more than 2 flows allowed)

T1 : 150 deg C. , T2 : 180 deg C. , T3 : 230 deg C. , T4 : 260 deg C.

a : Preheating T1～T2・・・ 60 to 120 seconds
b : Heating T3・・・ 30 to 50 seconds
c : Peak temperature T4・・・ 260±5 deg C. ,5 to 10 seconds
d : Temperature rising slope 10 deg C.／1 second, MAX.
e : Temperature falling slope 8 deg C.／1 second, MAX.

8.2 Cleaning conditions

(1) Cleaning agent : Isopropyl alcohol
(2) Dip cleaning : 30 minutes, MAX., at 40 deg C.
(3) Vapor cleaning : 30 minutes, MAX.
(4) Ultrasonic cleaning : 1 minute, MAX., with a maximum power of 10W

8.3 Recommended Repair Soldering Conditions

(1) Preheating Conditions

The temperature difference between soldering iron and device surface must be under 100 deg C.

(2) Recommended Condition of Soldering Iron

1.Chip temperature : 290 deg C.MAX
2.Power : 20W MAX.
3.Dimension of iron chip : 1.0 mm dia. MAX.
4.Soldering time : 3 seconds MAX.